

observations were made; and the mean temperature of the air at the stations:

*Temperature of water for January, 1886.*

Station.	Temperature at bottom.		Range.	Average depth, feet and tenths.	Mean temperature of the air at station.
	Max.	Min.			
Atlantic City, New Jersey .....	40.0	28.5	11.5	6.6	29.7
Alpena, Michigan* .....	52.5	30.7	1.8	12.5	15.3
Augusta, Georgia .....	53.3	32.8	20.5	14.6	40.2
Baltimore, Maryland .....	39.5	32.1	7.4	10.3	29.1
Boston, Massachusetts .....	38.1	29.5	8.6	19.6	25.9
Buffalo, New York .....	37.6	32.0	5.6	10.3	22.1
Canby, Fort, Washington Territory .....	49.8	38.3	11.5	15.5	40.1
Cedar Keys, Florida .....	58.8	34.7	24.1	7.6	49.2
Charleston, South Carolina .....	51.6	28.5	23.1	39.1	42.8
Chicago, Illinois* .....	37.3	33.1	4.2	9.0	21.4
Chincoteague, Virginia* .....	41.8	28.4	13.4	2.7	32.7
Cleveland, Ohio* .....	34.3	31.9	2.4	14.0	23.1
Detroit, Michigan* .....	37.2	35.4	1.8	24.7	24.7
Duluth, Minnesota* .....	34.5	33.1	1.4	10.3	5.7
Eastport, Maine .....	40.9	36.3	4.6	15.9	22.9
Escanaba, Michigan* .....	60.6	31.0	29.6	12.2	47.3
Galveston, Texas .....	33.6	32.3	1.3	19.0	20.2
Grand Haven, Michigan* .....	63.4	33.7	29.7	7.2	46.3
Indianola, Texas .....	57.6	42.0	15.6	18.0	50.7
Jacksonville, Florida .....	70.9	60.2	10.7	17.8	63.8
Key West, Florida .....	33.4	31.8	1.6	10.0	15.0
Mackinaw City, Michigan* .....	56.2	35.0	21.2	11.1	39.7
Macon, Fort, North Carolina .....	34.4	32.2	2.2	12.8	13.8
Marquette, Michigan* .....	52.6	40.5	12.1	15.9	44.1
Milwaukee, Wisconsin* .....	41.0	30.6	10.4	15.6	25.4
Mobile, Alabama .....	38.8	32.4	6.4	12.2	27.8
New Haven, Connecticut .....	40.0	32.0	8.0	18.3	28.5
New London, Connecticut .....	44.6	31.2	13.4	15.9	34.3
Norfolk, Virginia .....	55.4	39.8	15.6	16.6	46.3
Pensacola, Florida .....	37.2	30.7	6.5	16.6	21.3
Portland, Maine .....	45.0	33.4	11.6	52.1	36.1
Portland, Oregon .....	36.6	33.4	3.2	11.2	22.7
Sandusky, Ohio* .....	41.0	30.9	10.1	2.2	28.8
Sandy Hook, New Jersey .....	54.6	49.7	4.9	38.0	50.9
San Francisco, California .....	51.1	34.1	17.0	9.7	45.9
Savannah, Georgia .....	55.1	34.9	20.2	10.5	40.0
Smithville, North Carolina .....	39.5	33.2	6.3	13.6	20.7
Toledo, Ohio* .....					
Wilmington, North Carolina .....					

\* Observations interrupted by ice; see text.

† Observations interrupted from the 16th to the 31st.

Observations were interrupted by ice during the month, as follows:

Grand Haven, Michigan, 9th to 31st; Cleveland, Ohio, 9th to 31st; Sandusky, Ohio, 7th to 31st; Alpena, Michigan, 7th to 31st; Mackinaw City, Michigan, 6th to 31st; Marquette, Michigan, 8th to 31st; Duluth, Minnesota, 6th, 7th, 10th, 15th, 19th to 31st; Escanaba, Michigan, 1st to 31st; Detroit, Michigan, 7th to 31st; Chicago, Illinois, 7th to 31st; Milwaukee, Wisconsin, 1st to 31st; Chincoteague, Virginia, 12th to 17th; Toledo, Ohio, 8th to 31st.

#### WINDS.

The most frequent directions of the wind during January, 1886, are shown on chart ii by the arrows flying with the wind; they are also given in the tables of miscellaneous data. Over the eastern slope of the Rocky Mountains, in the extreme northwest, upper Mississippi and Missouri valleys, middle Atlantic and west Gulf states the prevailing winds were, in most cases, from the northwest; in the lower lake region and east Gulf states they were westerly; in New England and on the Pacific coast they were variable.

#### HIGH WINDS.

[In miles per hour.]

Wind-velocities of fifty or more miles per hour were recorded during the month, as follows:

Mount Washington, New Hampshire, 68, nw., 1st; 50, sw., 3d; 93, s., 4th; 72, sw., 5th; 52, s., 6th; 107, nw., 7th; 108, nw., 8th; 108 ne., 9th; 58, nw., 10th; 51, nw., 11th; 88, nw., 12th; 74, nw., 13th; 73, s., 16th; 73, nw., 17th; 96, nw., 18th; 80, se., 19th; 120, nw., 20th; 80, sw., 21st; 122, nw., 23d; 63, nw., 24th; 62, sw., 25th; 60, nw., 26th; 59, nw., 31st.

Pike's Peak, Colorado, 58, nw., 7th; 55, n., 8th; 74, nw., 9th; 80, nw., 10th; 63, nw., 11th; 50, sw., 21st; 88, w., 22d; 70, w., 23d; 70, w., 24th; 54, n., 28th; 64, nw., 29th; 70, nw., 30th.

Cape Mendocino, California, 68, se., 12th; 144, se., 20th; 72, se., 21st; 108, se., 22d; 86, se., 23d; 88, se., 26th.

Sandy Hook, New Jersey, 53, nw., 6th; 50, nw., 7th; 50, e., 8th; 66, ne., 9th; 53, nw., 23d.

Fort Elliott, Texas, 58, nw., 7th; 52, nw., 28th; 59, n., 22d.

Indianola, Texas, 53, n., 3d; 56, n., 7th; 60, n., 8th.

Fort Maginnis, Montana, 50, n., 14th; 62, sw., 9th.

Fort Macon, North Carolina, 53, sw., 8th; 62, sw., 9th.

Valentine, Nebraska, 54, nw., 6th; 66, nw., 7th.

Tatoosh Island, Washington Territory, 50, e., 18th; 54, e., 19th.

Fort Canby, Washington Territory, 60, se., 22d; 68, sw., 24th.

Atlantic City, New Jersey, 53, e., 8th; 52, e., 9th.

Eastport, Maine, 60, ne., 9th.

Sandusky, Ohio, 50, nw., 9th.

Rochester, New York, 60, w., 22d.

Red Bluff, California, 50, se., 20th.

Cheyenne, Wyoming, 52, nw., 21st.

Boston, Massachusetts, 64, ne., 9th.

Cape Henry, Virginia, 60, ne., 8th.

Block Island, Rhode Island, 64, ne., 9th.

#### LOCAL STORMS.

*California.*—San Francisco: an unusually severe storm occurred on the 20th, the wind reaching a velocity of forty-two miles per hour, blowing down trees, awnings, telegraph and telephone lines; in the western portion of the city several buildings were blown down, and a number of persons severely injured; in the business portion of the city signs, awnings, etc., were carried away and windows broken by the strong wind; the shipping in the harbor sustained but little damage, owing to the ample warning given.

Grass Valley, Nevada county: a heavy wind and rain storm occurred on the 20th; signs, fences, and telegraph lines were prostrated.

Half Moon Bay, San Mateo county: a heavy rain, and the severest wind storm within the past twenty-five years, occurred on the 20th; fences, buildings, and telegraph lines were blown down, and great damage done.

Chico, Butte county: the heaviest wind and rain storm for years occurred on the 20th, doing considerable damage to property.

Marysville, Yuba county: a terrific southeast gale and heavy rain storm occurred on the 20th, doing considerable damage about the city and in the surrounding country, hundreds of trees were uprooted, fences and telegraph lines blown down.

Rocklin, Placer county: the severe storm of the 20th blew down fences, trees, wind-mills, etc.

Sacramento: the heaviest wind storm in the past eight years occurred on the 20th; considerable damage was done in the city; fences, gates, small buildings, etc., were blown down, houses unroofed, trees and shrubbery destroyed or seriously injured.

Hydesville, Humboldt county: the heaviest wind storm for years occurred on the 20th; fences were scattered in every direction.

#### NAVIGATION.

##### STAGE OF WATER IN RIVERS.

The Mississippi River was frozen for the entire month at Saint Paul, Minnesota; from the 5th to 31st at La Crosse, Wisconsin; and from the 1st to 31st at Dubuque, Iowa. On the 28th a solid mass of ice blockaded the river from the mouth of the Illinois River as far south as Ste. Genevieve, Missouri, a distance of sixty-five miles; the ice was sixteen inches thick, and resembled in many respects the ice gorge which blockaded the river in 1875.

The Missouri River was frozen throughout the month at all stations, except at Leavenworth, Kansas, at which place it froze on the 4th.

The Arkansas River, at Fort Smith, was frozen from the 9th to 31st, and at Little Rock from the 9th to 26th.